

may be made entirely of extruded aluminum components. Cobes et al. does not disclose an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Cobes et al. also does not disclose a low transmittance glass window positioned within window portions of the vehicle structure. Cobes et al. further does not disclose an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle.

As to the secondary reference applied by the Examiner, U.S. Patent No. 5,865,940 to Li discloses a reversible attachment using dielectric heating. An automobile 2 has an instrument panel 6. The instrument panel 6 comprises a generally hollow housing 10 made of a rigid non-conductive material such as plastic. At least a portion of the housing 10 is covered by a padded face 8. Firewall 16 separates the interior cabin compartment from the engine compartment. Li does not disclose an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Li also does not disclose a low transmittance glass window positioned within window portions of the vehicle structure.

As to the tertiary reference applied by the Examiner, U.S. Patent No. 4,973,511 to Farmer et al. discloses a composite solar/safety film and laminated window assembly made therefrom. The laminate can be used in vehicle applications such as windshields or side and rear windows. The laminate includes a substrate layer 16 that serves as a carrier for solar coatings 18 and together the substrate 16 and solar coatings 18 comprise a solar control film 20. Farmer et al. does not disclose an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal

management for climate control within an occupant compartment for the vehicle. Farmer et al. does not disclose an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle.

In contradistinction, claim 1 claims the present invention as a thermally energy efficient vehicle including a vehicle structure. The vehicle structure includes generally interconnected structural members that form a frame for the vehicle and generally planar interconnected panels that define a shape of the vehicle. A thermally efficient structural material is utilized for the structural members to reduce a thermal mass of the structural members. The thermally energy efficient vehicle also includes a low transmittance glass window positioned within window portions of the vehicle structure. The low transmittance glass window increases a thermal resistance of the vehicle. The thermally energy efficient vehicle includes an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle. The thermally efficient energy vehicle further includes an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. The energy efficient thermal management system consumes less thermal energy as a result of the increased thermal resistance of the vehicle.

The United States Court of Appeals for the Federal Circuit (CAFC) has stated in determining the propriety of a rejection under 35 U.S.C. § 103, it is well settled that the obviousness of an invention cannot be established by combining the teachings of the prior art absent some teaching, suggestion or incentive supporting the combination. See In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 227 U.S.P.Q. 657 (Fed. Cir. 1985); ACS Hospital Systems, Inc. v. Montefiore

Hospital, 732 F.2d 1572, 221 U.S.P.Q. 929 (Fed. Cir. 1984). The law followed by our court of review and the Board of Patent Appeals and Interferences is that “[a] prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art.” In re Rinehart, 531 F.2d 1048, 1051, 189 U.S.P.Q. 143, 147 (C.C.P.A. 1976). See also In re Lalu, 747 F.2d 703, 705, 223 U.S.P.Q. 1257, 1258 (Fed. Cir. 1984) (“In determining whether a case of prima facie obviousness exists, it is necessary to ascertain whether the prior art teachings would appear to be sufficient to one of ordinary skill in the art to suggest making the claimed substitution or other modification.”)

As to the differences between the prior art and the claims at issue, Cobes et al. ‘208 merely discloses an S-portion for a frame-type vehicle body construction and an associated method having a vehicle body construction that may be made entirely of extruded aluminum components. Cobes et al. ‘208 lacks an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Cobes et al. ‘208 also lacks a low transmittance glass window positioned within window portions of the vehicle structure. Cobes et al. ‘208 further lacks an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle. Contrary to the Examiner’s opinion, because Cobes et al. ‘208 is silent on components used to finish the frame, it is not inherent to provide exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle.

Li ‘940 merely discloses a reversible attachment using dielectric heating in which an instrument panel comprises a generally hollow housing made of a rigid non-conductive

material such as plastic and at least a portion of the housing is covered by a padded face. Li ‘940 lacks an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Li ‘940 also lacks a low transmittance glass window positioned within window portions of the vehicle structure. Li ‘940 further lacks an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle. Contrary to the Examiner’s opinion, the instrument panel 6 of Li ‘940 is not an energy efficient insulator and there is no energy efficient insulator between either the floor or dash panel and the occupant compartment as described on page 14 of the present application. Further, the instrument panel 6 of Li ‘940 is not a lightweight gas filled panel or bag.

Farmer et al. ‘511 merely discloses a composite solar/safety film and laminated window assembly made therefrom that can be used in vehicle applications such as windshields or side and rear windows and includes a substrate layer serving as a carrier for solar coatings. Farmer et al. ‘511 lacks an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Farmer et al. ‘511 also lacks an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle. The Examiner may not, because he doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. See In re Warner, 379 F. 2d 1011, 154 U.S.P.Q. 173 (C.C.P.A. 1967). There is no motivation to combine Cobes et al. ‘208, Li ‘940, and Farmer et al. ‘511 together to obtain the claimed invention and such a combination is still deficient in achieving Applicant’s claimed invention.

Applicants are not attacking the references individually, but are clearly pointing out that each reference is deficient and, if combined (although Applicants maintain that they are not combinable), the combination is deficient. The present invention sets forth a unique and non-obvious combination of a thermally energy efficient vehicle that demonstrates reduced thermal energy transmission into or out of the vehicle. The references, if combinable, fail to teach or suggest the combination of a thermally efficient energy vehicle including a thermally efficient structural material for structural members of a vehicle structure, a low transmittance glass window positioned within window portions of the vehicle structure, an energy efficient insulator attached to an inside portion of the vehicle structure, and an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle as claimed by Applicant. As a result, the Examiner has failed to establish a case of prima facie obviousness. Therefore, it is respectfully submitted that claim 1 and the claims dependent therefrom are allowable over the rejection under 35 U.S.C. § 103.

Claims 6 through 9, 11, and 13 through 20 were rejected under 35 U.S.C. § 103 as being unpatentable over Cobes et al. '208, Farmer et al. '511, and Li '940 and further in view Lisec (U.S. Patent No. 5,173,148). Applicant respectfully traverses this rejection.

U.S. Patent No. 5,173,148 to Lisec discloses installation for the production of insulating glass. In FIG. 5, two glass panes 3 are pressed to form a single insulating glass pane. Lisec does not disclose an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Lisec also does not disclose an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle.

As to claim 11, claim 11 claims the present invention as a thermally energy efficient vehicle including a vehicle structure. The vehicle structure includes generally interconnected structural members that form a frame for the vehicle and generally planar interconnected panels that define a shape of the vehicle, wherein a thermally efficient structural material is utilized for the structural members to reduce a thermal mass of the vehicle. The thermally energy efficient vehicle also includes a low transmittance glass window positioned within window portions of the vehicle structure, wherein the low transmittance glass window includes two parallel sheets of glass separated by an air gap to increase a thermal resistance of the vehicle. The thermally energy efficient vehicle includes an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle. The thermally energy efficient vehicle further includes an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. The thermal energy consumption capacity of the energy efficient thermal management system is decreased since the energy efficient thermal management system consumes less thermal energy resulting from the increased thermal resistance and reduced thermal mass of the vehicle.

As to the differences between the prior art and the claims at issue, Cobes et al. ‘208 merely discloses an S-portion for a frame-type vehicle body construction and an associated method having a vehicle body construction that may be made entirely of extruded aluminum components. Cobes et al. ‘208 lacks an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Cobes et al. ‘208 also lacks a low transmittance glass window positioned within window portions of the

vehicle structure including two parallel sheets of glass separated by an air gap to increase a thermal resistance of the vehicle. Contrary to the Examiner's opinion, because Cobes et al. '208 is silent on components used to finish the frame, it is not inherent to provide an exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle.

Li '940 merely discloses a reversible attachment using dielectric heating in which an instrument panel comprises a generally hollow housing made of a rigid non-conductive material such as plastic and at least a portion of the housing is covered by a padded face. Li '940 lacks an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Li '940 also lacks a low transmittance glass window positioned within window portions of the vehicle structure including two parallel sheets of glass separated by an air gap to increase a thermal resistance of the vehicle. Li '940 further lacks an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle. Contrary to the Examiner's opinion, the instrument panel 6 of Li '940 is not an energy efficient insulator and there is no energy efficient insulator between either the floor or dash panel and the occupant compartment as described on page 14 of the present application. Further, the instrument panel 6 of Li '940 is not a lightweight gas filled panel or bag.

Farmer et al. '511 merely discloses a composite solar/safety film and laminated window assembly made therefrom that can be used in vehicle applications such as windshields or side and rear windows and includes a substrate layer serving as a carrier for solar coatings. Farmer et al. '511 lacks an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal

management for climate control within an occupant compartment for the vehicle. Farmer et al. '511 also lacks an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle.

Lisec '148 merely discloses an installation for the production of insulating glass having two glass panes pressed to form a single insulating glass pane. Lisec '148 lacks an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Lisec '148 also lacks an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle. There is no motivation to combine Cobes et al. '208, Li '940, Farmer et al. '511, and Lisec '148 together to obtain the claimed invention and such a combination is still deficient in achieving Applicant's claimed invention.

The present invention sets forth a unique and non-obvious combination of a thermally energy efficient vehicle that demonstrates reduced thermal energy transmission into or out of the vehicle. The references, if combinable, fail to teach or suggest the combination of a thermally efficient energy vehicle including a thermally efficient structural material for structural members of a vehicle structure, a low transmittance glass window positioned within window portions of the vehicle structure including two parallel sheets of glass separated by an air gap to increase a thermal resistance of the vehicle, an energy efficient insulator attached to an inside portion of the vehicle structure, and an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle as claimed by Applicant.

The CAFC has held that “[t]he mere fact that prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification”. In re Gordon, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). The Examiner has failed to show how the prior art suggested the desirability of modification to achieve Applicant’s invention. As a result, the Examiner has failed to establish a case of prima facie obviousness. Therefore, it is respectfully submitted that claim 11 and the claims dependent therefrom are allowable over the rejection under 35 U.S.C. § 103.

As to claim 18, claim 18 claims the present invention as a thermally energy efficient vehicle including a vehicle structure. The vehicle structure includes generally interconnected structural members that form a frame for the vehicle and generally planar interconnected panels that define a shape of the vehicle, wherein a thermally efficient structural material is utilized for the structural members to reduce a thermal mass of the vehicle. The thermally energy efficient vehicle also includes an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle. The thermally energy efficient vehicle includes a low transmittance glass window positioned within window portions of the vehicle structure. The low transmittance glass window includes two parallel sheets of glass separated by an air gap to increase the thermal resistance of the vehicle. The thermally energy efficient vehicle further includes an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. A thermal energy consumption capacity of the energy efficient thermal management system is decreased since the energy efficient thermal management system consumes less thermal energy resulting from the increased thermal resistance and reduced thermal mass of the vehicle.

As to the differences between the prior art and the claims at issue, Cobes et al. ‘208 merely discloses an S-portion for a frame-type vehicle body construction and an associated method having a vehicle body construction that may be made entirely of extruded aluminum components. Cobes et al. ‘208 lacks an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Cobes et al. ‘208 also lacks a low transmittance glass window positioned within window portions of the vehicle structure including two parallel sheets of glass separated by an air gap to increase a thermal resistance of the vehicle. Cobes et al. ‘208 further lacks an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle. Contrary to the Examiner’s opinion, because Cobes et al. ‘208 is silent on components used to finish the frame, it is not inherent to provide an exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle.

Li ‘940 merely discloses a reversible attachment using dielectric heating in which an instrument panel comprises a generally hollow housing made of a rigid non-conductive material such as plastic and at least a portion of the housing is covered by a padded face. Li ‘940 lacks an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Li ‘940 also lacks a low transmittance glass window positioned within window portions of the vehicle structure including two parallel sheets of glass separated by an air gap to increase a thermal resistance of the vehicle. Li ‘940 further lacks an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle. Contrary to the Examiner’s opinion, the instrument

panel 6 of Li '940 is not an energy efficient insulator and there is no energy efficient insulator between either the floor or dash panel and the occupant compartment as described on page 14 of the present application. Further, the instrument panel 6 of Li '940 is not a lightweight gas filled panel or bag.

Farmer et al. '511 merely discloses a composite solar/safety film and laminated window assembly made therefrom that can be used in vehicle applications such as windshields or side and rear windows and includes a substrate layer serving as a carrier for solar coatings. Farmer et al. '511 lacks an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Farmer et al. '511 also lacks an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle.

Lisec '148 merely discloses an installation for the production of insulating glass having two glass panes pressed to form a single insulating glass pane. Lisec '148 lacks an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle. Lisec '148 also lacks an energy efficient insulator attached to an inside portion of the vehicle structure to increase a thermal resistance of the vehicle. There is no motivation to combine Cobes et al. '208, Li '940, Farmer et al. '511, and Lisec '148 together to obtain the claimed invention and such a combination is still deficient in achieving Applicant's claimed invention.

There is absolutely no teaching of a level of skill in the vehicle art that a thermally energy efficient vehicle can be constructed with a thermally efficient structural material for structural members, a low transmittance glass window positioned within window portions

including two parallel sheets of glass separated by an air gap, an energy efficient insulator attached to an inside portion, and an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment. The Cobes et al. '208, Li '940, Farmer et al. '511, and Lisec '148 references skirt around, but do not suggest the claimed invention as a whole. See Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1383 (Fed. Cir. 1986). The present invention sets forth a unique and non-obvious combination of a thermally energy efficient vehicle that demonstrates reduced thermal energy transmission into or out of the vehicle. The references, if combinable, fail to teach or suggest the combination of a thermally efficient energy vehicle including a thermally efficient structural material for structural members, a low transmittance glass window positioned within window portions of the vehicle structure including two parallel sheets of glass separated by an air gap to increase a thermal resistance of the vehicle, an energy efficient insulator attached to an inside portion of the vehicle structure, and an energy efficient thermal management system providing exterior thermal management for powertrain cooling within an engine compartment and interior thermal management for climate control within an occupant compartment for the vehicle as claimed by Applicant. As a result, the Examiner has failed to establish a case of prima facie obviousness. Therefore, it is respectfully submitted that claim 18 and the claims dependent therefrom are allowable over the rejection under 35 U.S.C. § 103.

Obviousness under § 103 is a legal conclusion based on factual evidence (In re Fine, 837 F.2d 1071, 1073, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988), and the subjective opinion of the Examiner as to what is or is not obvious, without evidence in support thereof, does not suffice. Since the Examiner has not provided a sufficient factual basis, which is supportive of his/her position (see In re Warner, 379 F.2d 1011, 1017, 154 U.S.P.Q. 173, 178 (C.C.P.A. 1967),

cert. denied, 389 U.S. 1057 (1968)), the rejections of claims 1, 4 through 11, and 13 through 20 are improper. Therefore, it is respectfully submitted that claims 1, 4 through 11, and 13 through 20 are allowable over the rejections under 35 U.S.C. § 103.

Based on the above, it is respectfully submitted that the claims are in a condition for allowance or in better form for appeal. Applicants respectfully submit that the final rejection is improper and reconsideration and withdrawal of the final rejection be taken. It is respectfully requested that this Amendment be considered and entered under 37 C.F.R. 1.116.

Respectfully submitted,

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Date: June 25, 2003

Attorney Docket No.: 0667.00246  
Disclosure No.: V200-0035